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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/708,326 | 02/24/2004 | John E. Prevost | 8482/011 | 2325 |
| 41129 | 7590 | 09/21/2005 | EXAMINER | |
| NEIL J. COIG 2355 DRUSILLA LANE BATON ROUGE, LA 70809 | | | KOSSON, ROSANNE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1653 | |

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/708,326

Applicant(s)

PREVOST ET AL.

Examiner

Rosanne Kosson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/24/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicants' election without traverse of Group III, claims 20-22 in the reply filed on August 8, 2005 is acknowledged. Claims 1-19 and 23-27 have been canceled. No claims have been amended or added. Accordingly, claims 20-22 are examined on the merits herewith.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20-22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for extracting whole corn kernels with the solvents propane and butane under the conditions of 60-140°F and 100-200 psig, does not reasonably provide enablement for extracting whole corn kernels with any process solvent at any temperature below 140°F and at any pressure below 200 psig. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. The specification does not disclose the use of any solvents other than propane and butane, and the claims do not recite a lower limit for the temperature and pressure ranges. The claims read on performing the claimed process at any

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temperature and pressure at which any solvent that can be used in a process is a liquid. The claims also read on performing the claimed process at room temperature and pressure, or in a partial or complete vacuum at any temperature if the solvent remains a liquid. Because only the solvents propane and butane are disclosed, to be enabled, the claims must recite conditions under which these compounds are effective solvents for extracting corn.

As a result, the scope of the instant claims is not commensurate with the enablement of the instant disclosure, because practice of the claimed invention would require undue experimentation by an artisan of ordinary skill in the art to determine which combinations of solvent, temperature and pressure result in a liquid that can extract lipids from whole corn.

The factors to be considered in determining whether undue experimentation is required are summarized in *re Wands* 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir, 1988). The court in *Wands* states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.'" (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of

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experimentation necessary (immense, because Applicants assert that any process solvent at any temperature and pressure can be used to extract whole corn, producing oil soluble and starch-containing fractions), (2) the amount of direction or guidance presented (specific guidance is presented for using propane and butane at 60-140° F and 100-200 psig), (3) the presence or absence of working examples (the specification has no working or even prophetic examples), (4) the nature of the invention (whole corn is extracted with any solvent at any temperature and pressure), (5) the state of the prior art (crushed corn is extracted with liquid propane at a temperature of 20-100° C (68-212° F) and 30-100 atmospheres, and corn is extracted with liquid propane at room temperature to 140° F and less than atmospheric pressure to 200 psig, preferably 60-130° F, and more preferably 100-140 psig, see below), (6) the relative skill of those in the art (very high, that of highly trained research scientist), (7) the predictability or unpredictability of the art (see below), and (8) the breadth of the claims (broad, as discussed above).

With respect to the quantity of experimentation necessary, to demonstrate that any solvent at any temperature and pressure, as long as it is liquid, can extract oil-soluble material from whole corn, many experiments would have to be conducted with many different solvents at many different temperatures and pressures to determine which combinations of these parameters result in liquids. It would also have to be determined which of these liquids can extract oil-soluble materials from whole corn.

Such experimentation is necessary because the specification discloses only two solvents and limited ranges of temperature and pressure. There is a large gap between

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Applicants' disclosure and the amount of information needed to perform a process of producing ethanol from corn in which any solvent is used at any temperature and pressure to extract the corn. One of skill in the art would have to experiment unduly to fill in this gap.

To be commensurate in scope with a broad claim for extracting corn with a solvent at any temperature and pressure, a great deal of guidance must be present in the specification to enable one of skill in the art to perform the claimed process. As noted above, only limited guidance and no examples are disclosed.

Regarding predictability, chemical extraction is one of the unpredictable arts, as each solvent has different physical and chemical properties and reacts differently with any given material, such as corn. Therefore, one of skill in the art could not predict, based on the instant specification, that any solvent at any temperature and pressure could be used to extract oil-soluble materials from corn.

Accordingly, the instant claims fail to satisfy the enablement requirement.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwenger (US 3,939,281) in view of Franke (US 5,281,732) and Markaverich et al. (US 6,277,418). Schwenger discloses a method of extracting fat from crushed corn in which the corn is contacted with a normally gaseous, inert solvent, such as propane or butane under supercritical conditions (see col. 1, lines 5-8 and 40-45). Liquid propane or butane is then used to extract lipids from the crushed corn at a temperature of 20-100° C (68-212° F) and 30-100 atmospheres (see col. 1, lines 52-63, and col. 2, lines 51-66). The starch-containing fraction is ground to a grain size of below about 0.5 mm and extracted again. A crude corn germ oil is obtained (see col. 3, lines 47-57). The defatted, starchy material may be directly subjected to an alcoholic fermentation to produce a beer (see col. 5, lines 52-65). Schwenger does not disclose a method of producing ethanol from corn in which the corn is whole, i.e., not crushed, or in which the pressure is below 200 psig (200 psig is about 14 atm).

Franke discloses that any oil-bearing vegetable material may be extracted with propane or butane under conditions at which the normally inert gas is a liquid, for example, room temperature to about 140°F, preferably 60-130°F, and less than

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atmospheric pressure to 200 psig, more preferably 100-140 psig (see col. 3, lines 5-6 and 32-37, and col. 4, line 43, to col. 5, line 12). Franke notes that one example of an oil-bearing vegetable material is corn meal, but any oil-bearing vegetable material may be extracted under the given conditions. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use pressures of atmospheric pressure to 200 psig, particularly 100-140 psig, because Franke teaches that 100-140 psig is the preferred pressure range for extracting oil from corn with liquid propane or butane. Applicants also note this preferred range in the specification in paragraph 28, where Franke is cited.

Markaverich et al. disclose that when corn is extracted with an organic or aqueous solvent, whole corn kernels or corn cobs, in a fresh, frozen, dried or preserved state may be used. The corn may be whole or ground. The solvent may be an alcohol, ether, ketone, water and mixtures thereof (see col. 4, line 55, to col. 5, line 28). The temperature may be between 0-100° C (32-212° F). It would have been obvious to one of ordinary skill in the art to use whole corn kernels in the process of Schwengers, instead of crushed corn, because Markaverich et al. teach that whether the corn is whole or ground, it may be extracted with an organic solvent without affecting the process in which the extraction is a step.

In view of the foregoing, a holding of obviousness is required.

No claim is allowed.

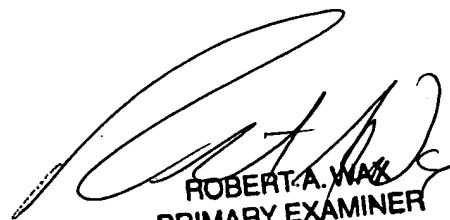
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosanne Kosson whose telephone number is 571-272-2923. The examiner can normally be reached on Monday-Friday, 8:30-6:00, with alternate Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber, can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rosanne Kosson
Examiner
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rk/2005-09-08



ROBERT A. WAX
PRIMARY EXAMINER